Mr. P's Class!

TedED (ed.ted.com)

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https://ed.ted.com/lessons/how-heavy-is-air-dan-quinn

Too often we think of air as empty space — but compared to a vacuum, air is actually pretty heavy. So, just how heavy is it? And if it's so heavy, why doesn't it crush us? Dan Quinn describes the fundamentals of air pressure and explains how it affects our bodies, the weather and the universe at large. The video mentions wind and breathing as two examples of pressure-driven flow, but other examples are all around you. Flows through pipes are almost always pressure-driven; think of fire hoses, drinking straws, or blood vessels. What else can cause fluids to flow? One common cause is gravity. Rivers and streams are driven by gravity, and smoke rises because gravity pulls more on the cooler heavier air nearby. Flows can also be directly initiated by the motion of a boundary, such as when you stir a cup of tea or shake a water bottle.

Let's return to wind for a moment. Wind is caused by pressure differences on the Earth's surface, but how do these pressure differences get here? And how does the Earth's rotation affect the wind? The details of wind can be very complicated, and some scientists devote their entire career to better understanding patterns in the wind. For more information about wind, check out Bill Nye's episode **[https://www.youtube.com/watch?v=uBqohRu2RRk]** on wind, and diagrams from eSchoolToday **[http://www.eschooltoday.com/winds/what-are-winds.html]** about the sources and types of wind.

1. The air in a typical gymnasium can weigh as much as _____.
2. What is driven by pressure differences?

3. What is NOT a fluid?

5. If you filled a balloon on Earth and brought it to the moon, it would _____.
6. Air and water are both fluids, but that doesn't mean they always behave the same way. Name three ways in which air and water are similar and three ways in which they differ.

7. Based on what you learned about the molecular origins of pressure, do you think that heating a fluid will increase or decrease the pressure? Why?

8. How might you design a pressure sensor, that is, a device that measures the pressure at a point in a fluid?